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# THE EFFECT OF GENDER AND CULTURAL DIFFERENCES IN INFORMATION PROCESSING STRATEGIES IN RELATION TO E-COMMERCE VERSUS M-COMMERCE

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## Abstract

*Numerous studies have attempted to understand how gender and cultural differences separately affect how preferred information processing strategies, such as verbally or visually oriented, interact with persuasive appeals on various media. With billions or trillions of dollars to be made from electronic commerce across wired media or from mobile commerce through wireless technology, better understanding of the relationships involved can lead to significant returns for organizations. The research this paper proposes is designed to examine how gender and cultural differences in information processing strategies affect purchasing behavior on the Internet through the use of wired and wireless technology.*

**Keywords:** Information processing strategy, gender, culture, e-commerce, m-commerce

## Introduction

Numerous studies have attempted to understand how gender differences affect how preferred information processing strategies, such as verbally or visually oriented, interact with persuasive appeals on various media except for the Internet. National culture, more specifically the dimension of collectivism versus individualism as defined by Hofstede (1991, p. 5-6), has also been linked with media behavior (de Mooij, 1998). According to Hofstede (1998, p. 13), gender and the dimension of collectivism versus individualism are connected; they make up the conception of self.

Consumer e-commerce has grown from \$131 million in 1995 to \$40 Billion in year 2000. By including business-to-business e-commerce, e-commerce has been estimated to grow from \$50 billion in 1995 to \$2.71 trillion by the year 2004 (Harris, 2000). Estimates by various analysts for revenues from wireless or mobile e-commerce (m-commerce) by the year 2005 have ranged from a low of \$45 million to a high of \$100 billion (Swartz, 2000).

The purpose of this research is to examine how gender and cultural differences in information processing strategies affect purchasing behavior on the Internet through the use of wired and wireless technology. This is the natural extension of prior research in the area of information processing strategy to the Internet. On the practical side, this research could give organizations insight into markets worth billions of dollars.

## Theoretical Background

Research into the attitude-behavior relationship was truly started by Fishbein and Ajzen in 1975 with the Theory of Reasoned Action (TRA) (Hewstone et al., 1997, pp.245-6). The theory is based on the supposition that humans are rational beings that methodically process the available information in order to perform a behavior (Fishbein, 1979). Under TRA there is a direct relationship from intention to behavior with 'attitude towards behavior' and 'subjective norms' affecting intention. Davis et al. (1989) building upon TRA developed a model of system use called the Technology Acceptance Model (TAM). TAM states that 'perceived usefulness' and 'perceived ease of use' are of principal significance for IS acceptance behaviors.

Information processing theory describes behavior of consumers in terms of cognitive operations (Tybout et al., 1981). Behavior is seen as a consequence of how people think as well as what they think. It also states that individuals utilized particular processing strategies (Childers et al., 1985). The crucial factor in comprehending how individuals process information is their predisposition to employ one strategy over another. That a potential exists for the utilization of preferred rules or strategies in the acquisitions of information.

The identification and measurement of individual differences in information processing are important for two main reasons (Childers et al., 1985). One reason is that with better understanding of the interaction between individual preferences in information processing strategy and information presentation format, more effective consumer information systems can be developed. Bettman and Zins (1979) theorized that in order to improve the performance that is affected by format, congruence between the information presentation and information processing strategy must exist. The second reason is that by measuring the propensity for using various forms of consumer information, such as verbal versus visual, can lead to changes in how information is presented.

Of all the individual characteristics to segment consumers on, gender is the most easily identifiable and most used. Joan Meyers-Levy (1979) put forth the selectivity hypothesis, which states that males and females differ in the strategies they use to process information. According to this theory, males tend to engage in information processing that emphasizes greater use of efficiency-striving heuristics, whereas females utilize comprehensive processing in order to maximize the completeness of the processing. Further more, Darley and Smith (1995) hypothesis that given that males use heuristic processing they miss subtle cues but females respond to subtle cues because they utilize comprehensive processing. Darley and Smith (1995) also state that gender is also associated with differences across various tasks and traits. Specifically that males perform better on spatial tasks than females and females perform better than males on verbal tasks.

Hofstede (1991) postulates that there are four dimensions of national culture: power distance, which is relation to authority; uncertainty avoidance, which is the extent of fear overall uncertain or unknown situations; femininity vs. masculinity, which concerns the roles of males and females; and collectivism vs. individualism, where individualism refers to societies where ties between individuals are loose and collectivistic societies are characterized by strong, cohesive groups. According to de Mooij (1998), cultural communications strategies are linked to media behavior. In individualistic cultures, people tend to be more verbally oriented as opposed to collectivistic cultures, which are more visually oriented.

According to Schneider and Perry (2001, p. 3), electronic commerce (e-commerce) has been commonly used to mean shopping on the Internet or more specifically the World Wide Web (WWW). However, e-commerce is much broader than this. E-commerce includes business-to-consumer (B2C) transactions, which are consumers shopping on the WWW, and business-to-business (B2B) transactions, which are dealings between businesses through the use of the Internet, intranets, or extranets. It also includes transactions and business processes used to support selling and purchasing in both B2C and B2B transactions. Sometimes the term electronic business (e-business) is used to denote this more encompassing concept but for this paper and for this research the term e-commerce is used.

The wireless or mobile version of e-commerce, A.K.A m-commerce, is seen as the next wave of e-commerce as organizations fight to gain or retain competitive advantage (Lewis, 2000). Similar to the areas of e-commerce, m-commerce consists of three areas: internal mobility that focuses on supporting internal business operations; mobile B2B that is an extension of extranet and Internet services; and mobile B2C that expands Web-based consumer services (Liebmann, 2000). There are some limitations to this expansion of e-commerce through this wireless media. Two of these limitations are low bandwidth and a limited number of wireless application hosting services. Therefore, m-commerce requires new business model that are separate from those of e-commerce (Swartz, 2000).

## **Research Model**

Under my research model (shown above in Figure 1.), 'presentation design', which for the purpose of the study is either text-based or visual-based, leads to 'perceived usefulness' and 'perceived ease of use'. There is an interaction between an individual's 'preferred information processing strategy', which is determined by a person's gender and culture, and the relationship between 'presentation design' and 'perceived usefulness'. The remaining relationships are similar to that of TAM but with an actual purchase being the equivalent of system usage. The model leads to the following three main hypotheses:

H<sub>1</sub>: Females will differ from males on the level of perceived usefulness for a particular presentation design.

H<sub>2</sub>: Individuals from individualistic cultures will differ from individuals from collectivistic cultures on the level of perceived usefulness for a particular presentation design.

H<sub>3</sub>: The levels of perceived usefulness for a particular presentation design will differ between wired and wireless forms of communication.

## Research Methods

The research methods for the study are that of laboratory experiments utilizing a split-plot or mixed model repeated measure ANOVA design. Under a split-plot repeated measures design, there are within-subject factors, where subjects are exposed to all levels of that variable, and between-subject factors, where subjects are placed into a single level of that variable. By using a repeated measure design, a smaller total sample size is necessary to achieve the same power.

For this study, there are two within-subject factors, presentation design (text-based and visual-based) and media type (wired and wireless), which creates four possible treatment combinations. The between-subjects factors are gender, either female or male, and type of culture, either individualistic or collectivistic. Female and male students from a representative university in both the US, which according to Hofstede (1991) is the most individualistic culture, and Brazil, which is a far more collectivistic culture, will be shown mock web sites, which represent each of the four treatments. These web pages provide the user with information on particular products. The web pages will be produced using DB2® Developer and translated for wireless devices using DB2® Everyplace. The subjects will then fill out brief instruments to measure perceived usefulness, perceived ease of use, and intention to purchase for each of the treatments.

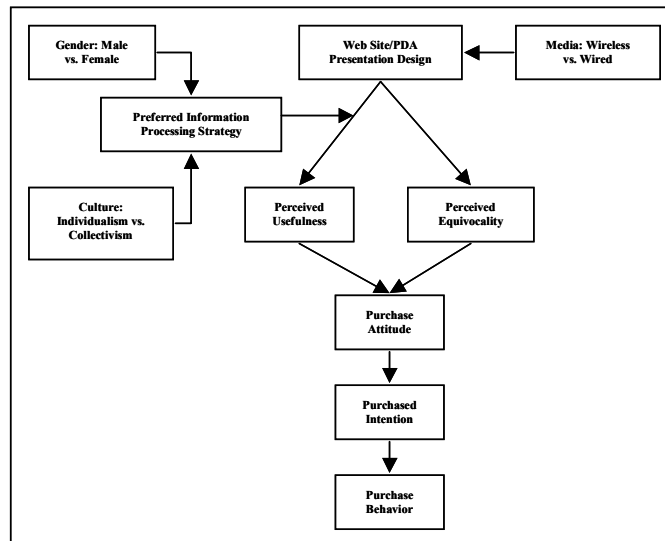


Figure 1. Internet Purchasing Model

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